

In the Specification

Please insert the following new paragraph after line 22 on page 4:

B | The parameterized member function may be used for "running descriptions", like live feeds. As described above, an MPEG7 DescriptionScheme (DS) sets forth the structure and semantics of the relationships between Descriptors and/or DescriptionSchemes that describe the various features of multimedia content. For purposes of illustration, assume an AV sequence that shows a piece of fruit changing state from not ripe to very ripe. The DescriptionScheme for the AV sequence could define a relationship between the piece of fruit and a "ripe" attribute. In Figs. 1-3, the relationship between the piece of fruit and the ripe attribute is illustrated as edge 105 extending between vertices (nodes) 101, 103. In order to indicate how ripe the fruit is at any point in the AV sequence, the present invention adds a parameter to the description of the relationship 105 that expresses the confidence or strength of the membership of the piece of fruit in the relationship. A parameter of zero indicates the fruit is not ripe and thus is not a member. A parameter of one indicates the fruit is very ripe and thus is fully a member. When the fruit is between "not ripe" and "very ripe," the fruit's membership in relationship 105 is considered "fuzzy" and is expressed by parameter values between zero and one.

Please replace the paragraph starting at line 23 on page 4 with the following marked up paragraph:

B2 | ~~Figs. 3 above of the ripe fruit illustrates this usage. The use of this is for "running descriptions", like live feeds.~~ Fig. 1 is a block diagram of a technique for using the present invention. In Fig. 1, a member function expressed in the Relation DS is shown. The parameter for the relationship is set to a value from zero to one depending on the ripeness of the fruit.

Please replace the paragraph starting at line 26 on page 4 with the following marked up paragraph:

B3
Fig. 2 is a block diagram of an alternate technique for using the present invention.

In Fig. 2, a member function expressed by a SemanticStateDS is shown. As described above, the parameter for the membership function may be one that affects the entities in the relationship. Thus, the ripeness of the fruit could be described in terms of its changing color. Assuming parameterization 200 describes the color of the fruit 101 as a value from zero to one, the confidence of the relationship 105 is the same value as the color value. The choice of which description of the fruit to use as parameterization 200 may be made by a user.

Please insert the following new paragraphs after line 27 on page 4:

B4
Fig. 3 is a block diagram of another alternate technique of using the present invention. As in Fig. 2, the state of the relationship 105 changes as the color changes but Fig 3 illustrates a more complicated parameterization description 300. A color histogram 301 is created from the various colors of the fruit as it ripens. Cognitive color 305 determines which colors in the color histogram 301 are perceivable by a human. A member function (fcn) 303 causes the state of the relationship 105 to vary from zero to one based on the perceivable color of the fruit. Thus, the state of the relationship 105 is dynamically determined by the interactions of the elements of description 300.

Fig. 4 is a flowchart for a method 400 that updates relationships between entities in an AV sequence. At block 401, a description is written containing relations that describe the relationships between the entities. At block 403, it is determined which relations may be represented by parameters having a numeric values, i.e., which relationships may be "fuzzy." At block 405, the data for the parameters is obtained from the user. The data may be a numeric value for a parameter, such as described for Fig. 1, a description of the parameter containing a numeric value for a parameter, such as parameterization 200 in Fig. 2, or a description capable of setting a parameter dynamically, such as description 300 in Fig. 3. Optionally, at block 407, a graph having a set E of edges representing the relations and a set V of vertices (nodes) representing the entities may be written as described above. Also as described above, an edge is not written when the parameter for a fuzzy relation is zero. The user may input a query based on the membership of the entities in the relationship, which is executed at block 409.